

Additions and Corrections

Scandium Trifluoromethanesulfonate as an Extremely Active Acylation Catalyst [*J. Am. Chem. Soc.* **1995**, *117*, 4413–4414]. K. ISHIHARA, M. KUBOTA, H. KURIHARA, AND H. YAMAMOTO*

Just before this paper was published, we discovered that we had inadvertently omitted references to two important earlier papers published by the T. Mukaiyama group [Shiina, I.; Miyoshi, S.; Miyashita, M.; Mukaiyama, T. *Chem. Lett.* **1994**, 515–518; Shiina, I.; Mukaiyama, T. *Chem. Lett.* **1994**, 677–680], who developed a useful method for carboxylic esters from free carboxylic acids and alcohols by the combined use of 4-(trifluoromethyl)benzoic anhydride and a catalytic amount of active titanium(IV) salt together with chlorotrimethylsilane and applied the method to macrolactonization of ω -hydroxycarboxylic acids. Also, they very recently developed an efficient esterification between free carboxylic acids and alcohols by the combined use of octamethylcyclotetrasiloxane and a catalytic amount of titanium(IV) chloride tris(trifluoromethanesulfonate) [Izumi, J.; Shiina, I.; Mukaiyama, T. *Chem. Lett.* **1995**, 141–142]. We were well aware of the contribution made by Mukaiyama et al. and we apologize for our failure to review it.

JA955012C

Book Reviews

Carbon-13 NMR Chemical Shifts and Stereochemical Analysis. By Kalevi Pihlaja (University of Turku, Finland) and Erich Kleinpeter (Universität Potsdam, Germany). VCH: New York. 1994. xiii + 379. \$85.00. ISBN 0-89573-332-3.

How many times have I sat down at my desk, following the isolation of a newly unidentified compound, wondering which NMR experiments would give me the information I needed to reveal its structure. At a time like this, a book such as the one I am reviewing here would be most valuable.

This work is by no means exhaustive in its treatment of the subject nor does it purport to be. In fact, this is probably why this book is liable to be picked up and often referred to by many organic chemists. In its first chapter it covers a reasonable survey of some of the more generally used, modern ^{13}C NMR methods (1D and 2D) for elaborating structures of various molecules. This is the kind of information that the casual NMR-oriented chemist is most likely to find useful in his or her search for a successful approach to elucidating a chemical structure.

The ensuing chapters (Chapters 2–4) on substituent effects do a reasonably good job in presenting a theoretical and semitheoretical approach to calculating ^{13}C chemical shifts for solving new structures. This section gives the reader a very excellent grasp for the value of this approach. The references are well selected and by in large relate to the current literature, some as late as 1993. Unfortunately, I cannot say that for all the citations in some of the other chapters. Conformational and configurational analysis is thoroughly covered in Chapter 4A–C.

The diversity of structures discussed throughout the book should give the work broad appeal among chemists. The authors make it a point to examine the use of ^{13}C NMR as a structure-determining tool for heteronuclear substituted compounds, carbohydrates, and natural products, as well as various acyclics and aromatics.

Chapter 8 is a particularly useful one in that it shows how one can use other NMR parameters in combination with ^{13}C NMR chemical shifts and conformational and configurational analyses to solve structure problems. Strategies which make use of ^1H shifts and coupling parameters in conjunction with ^{13}C – ^1H couplings and shift correlations clearly show how one can go about unraveling structure. References to established strategies, e.g., 1D, 2D, and 3D techniques and molecular modeling and how they are to be implemented in a step by step manner, provide the reader with a sound approach to solving the problem.

In conclusion, I am very high on this book because of (1) its clarity, (2) its readability for the nonspectroscopist, and (3) its richness as a repository of useful NMR methods, particularly for the organic chemist. I also appreciated the fact that the material is presented in an unpretentious manner, making it simple for the reader to digest the information and apply it readily to the problems at hand.

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JA945124O

The Aqueous Behavior of Surfactants. By Robert G. Laughlin (Procter & Gamble). Academic Press: London. 1994. xxi + 558 pp. \$70.00. ISBN 0-12-437745-9.

This monograph is based on the author's life-long experience working with surfactants in aqueous solutions. From the point of view of a chemical engineer doing university research on the potential uses of surfactants as separation agents, this book contains a wealth of information presented in an easy to read form. This work is certainly not intended to be a text for undergraduate or graduate courses, as clearly indicated by the author, but it constitutes an invaluable source of practical information for any researcher or practitioner working in the field.

The book is divided in four uneven parts followed by four useful appendixes. Part I contains two short chapters giving an overview of the field of study and of the book. Like the rest of the book, Part I is written in a clear and concise form. The author makes his point from the beginning and starts with the presentation of the phase diagram of the sodium chloride–water system. Although there is no discussion of surfactants at this point, by using a familiar example, the author shows the usefulness of phase diagrams in conveying experimental information.

Part II discusses the physical chemistry of surfactants in five chapters. Chapters 3 and 4 review basic concepts of thermodynamics, phase diagrams, and the phase rule. Chapter 5, which is the central chapter of this part, gives a complete an elegant description of the phase behavior of surfactants. The personal observations of the author noting where information (or proof of existence) is missing is particularly motivating for research-oriented readers. Chapters 6 and 7 are short

complements to Chapter 5 and help in tying up some loose ends. Perhaps the interpretation of Henry's constant as an activity coefficient in Chapter 7 could have been eliminated.

Chapter 8 forms, by itself, Part III. It gives an authoritative description of the structures and properties of the surfactant phases. The author makes a clear decision not to discuss models for the phase behavior of aqueous surfactant systems. However, in the last two sections of Chapter 8, he presents an interesting overview of the qualitative ideas and of the quantitative factors involved in the modeling of these systems.

Part IV has four chapters devoted to the discussion of molecular correlations. Chapter 9 is a perfect short introduction to the topic. Chapters 10 and 11 give a detailed presentation of the effect of molecular structure on the hydrophilicity and hydrophobicity of surfactant molecules. For a researcher without a strong background in chemistry, these two chapters are of invaluable help. Part IV closes with Chapter 12, which examines the effect of a third component on the aqueous phase behavior of surfactants. Typically, the author opens the chapter with a short presentation of how to read ternary diagrams. The systems presented are properly classified, and with the limited experimental information available, they provide all the elements necessary for a better understanding of the effect of a third component.

Part V closes the book with two short chapters on miscellaneous topics. Chapter 13 gives an overview of the importance of surfactants and surfactant science in industry and other fields. Chapter 14 presents a brief history of surfactant research work, with a characterization of the individuals involved. It is a pleasure to read.

The four appendixes of the book constitute, in the view of this reviewer, a unique contribution to facilitate the daily work of a researcher. The first contains a glossary of terms and acronyms used in surfactant science. The second gives a most complete list of literature references to binary and ternary systems studied up to April 1993, including a number of references to unreported and unpublished work. Appendix 3 gives the tools for extracting, graphing, and using data from published diagrams. Computer programs written in Sigmaplot and QBASIC languages are provided together with information on where to obtain additional software. The last appendix gives details on how to determine phase diagrams, describes the existing methods to do it, and gives useful references for further information.

In summary, the author has successfully accomplished his objective of transferring his personal research experience to his readers. This book, which compiles extensive experimental information and the associated knowledge, is particularly useful for researchers working with surfactant systems, and it is an essential addition both to their personal libraries and to institutional libraries which service specialized research.

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JA945118S

Molecular Ecology of Rhizosphere Microorganisms. Edited by F. O'Gara, D. N. Dowling, and B. Boesten (University College, Cork, Ireland). VCH Publishers, Inc.: Weinheim and New York, 1994. xiii + 177 pp. \$90.00. ISBN 3-527-30052-X.

Molecular and genetic techniques for examining microbial interactions with the environment are expanding rapidly due to the high interest in new methods for control of plant pathogens, for understanding plant-microbe interactions, and for bioremediation purposes. This short volume contains 13 chapters, each based on a paper presented at a biotechnology research forum held in Cork, Ireland, in April 1993. While the theme of use and survival of genetically modified organisms runs throughout most contributions, not all relate specifically to the rhizosphere (i.e., the soil around plant roots). However, those dealing with microbial destruction of waste materials (e.g., chlorinated hydrocarbons) in soil are included since organisms intended for this purpose must be competitive with indigenous flora.

The quality of papers ranges from high to simply adequate. Several chapters describe new methods appropriate for rapid identification of rhizosphere organisms; most are based on polymerase chain reaction (PCR) technology, with variations of random amplified polymorphic DNA (RAPD) being discussed most often. Fairly detailed research contributions (as opposed to review-type presentations) are found in two chapters; one of these describes bacterial endophytes of sweet corn and cotton while the other deals with subtractive hybridization coupled

with PCR for identification of specific *Rhizobium* strains. Two chapters are devoted to the important actinomycetes *Frankia* and *Streptomyces*. Each stresses methods for detection of these organisms, but that on *Streptomyces* also is concerned with genetic exchange and specific gene expression. A separate chapter is devoted to gene transfer between rhizobacteria in soil but suffers somewhat from being overly brief.

Not surprising is the presence of several chapters dealing almost exclusively with *Pseudomonas* species since they occupy a dominant position in the rhizosphere as well as being used in bioremediation and control of phytopathogens. While all make interesting reading, the chapters dealing with biocontrol of root diseases and with engineering environmentally responsive expression systems are among the best in the volume. Likewise, the case study that describes the field tracking of genetically modified *Pseudomonas corrugata* in Australia provides the reader with a "real world" experience of how well marker genes work for following released organisms.

This is not a thoughtfully crafted work designed to introduce new information in a logical fashion. As a collection of individual contributions, the presentation is somewhat uneven but this does not detract from the value of the work overall. The topic is just as important today as when the papers were delivered, the references were generally current for the time, and a 1.5-year delay in appearance of the volume is unfortunately about normal for such publications. The quality of editing is disappointing, however. There are annoying errors in spelling, misplaced punctuation, and failure to italicize names and gene designations. While these do not affect the science, they nonetheless convey a sense of haste in preparation that conflicts with the desired message of careful experimentation and writing. Finally, the index is quite incomplete and the review copy had two instances of blurred printing, unexpected for a volume priced at almost \$0.50 per page.

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JA955142L

Second Supplements to the 2nd Edition of Rodd's Chemistry of Carbon Compounds. Volume II: Alicyclic Compounds. Part B: Six- and Higher-Membered Monocarbocyclic Compounds (Partial: Chapters 6-8 in this Volume), Part C: Polycarbocyclic Compounds excluding Steroids, and Parts D and E: Steroids. Edited by M. Sainsbury. Elsevier: Amsterdam, 1994. xx + 642 pp. \$377.00. ISBN 0-444-81483-3.

The supplements are as follows: Chapter 6. Acyclic and Monocyclic Monoterpenoids by D. H. Grayson; Chapter 7. The Carotenoid Group of Natural Products by S. Liaaen-Jensen; Chapter 8a. The Cycloheptanes and Cyclooctanes by D. F. Ewing; Chapter 8b. Large Alicyclic Ring Systems by D.F. Ewing; Chapter 9. Polycarbocyclic Compounds with Separate Ring Systems and Spiro Compounds by M. Wills; Chapter 10. Polycyclic Compounds. Fused or Condensed Cyclic Systems by M. Sainsbury; Chapter 11. Polycarbocyclic Bridged Ring Compounds by A. P. Marchand; Chapter 12. Bicarboyclic Natural Products by R. Livingstone; Chapter 13. The Sesquiterpenoids by A. T. Hewson; Chapter 14. Diterpenoids and Sesterterpenoids by J.R. Hanson; Chapter 15. Steroids by F. J. Zeelen; Chapter 16. Glycosides, Saponins and Sapogenins by S. B. Mahato; Chapter 17. Triterpenoids by J. D. Connolly and R. A. Hill.

The continued updating of "Rodd" is a major service to organic chemistry. While many other encyclopedic works are available that claim to be comprehensive, in reality they are not. The closest series that can make this claim is "Rodd". This is, of course, in part because of the large number of volumes. The chapters are uniformly well written and remarkably free from errors. It is very pleasing to see that the text discusses structures that are usually on the same page and does so with admirable clarity. As a result, the books are surprisingly readable. Another excellent feature is that the references are in the text directly following the discussion. This makes access to the primary literature all the more easy. It is clear that a great deal of common sense has gone into producing this series, which serves as a model for other lesser works. While the price of the books makes individual ownership virtually impossible, they should be a standard component of any good organic chemical library.

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